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A
L E T T E R
TO
PROFESSOR BUCKLAND,
CONCERNING THE
ORIGIN OF THE WORLD,

BY
WILLIAM COCKBURN, D.D.,
DEAN OF YORK.

THEREFORE THE WORLD WHICH THEN WAS PERISHED,
BEING OVERFLOWED WITH THE WATER.—2 PET. iii. 6.

L O N D O N :
PUBLISHED BY HATCHARD AND SON, PICCADILLY; WHITTAKER
AND CO., AVE MARIA LANE; AND H. BELLERBY, YORK;
AND MAY BE HAD OF ALL BOOKSELLERS.

—
1838.



LETTER, &c.

York, Feb. 19, 1838.

REV. SIR,

I offer no apology for addressing you on a subject of great public interest.

In your late Bridgewater Treatise, you state your opinion that the solid fabric of the world was formed by Almighty power, many ages before the existence of man.

I am dissatisfied with the arguments you adduce in favour of this hypothesis; and seeking for instruction from one so qualified to bestow it, I presume to call your attention to a revision of the subject.

With respect to the geological *facts* concerning which we are about to reason, I take them from your book: you have had opportunities far superior to mine of verifying many of these facts by your own observation, and by diligent and scientific enquiries. I take for granted, therefore, that they are all correctly stated.

But if I rightly understand your system, which indeed you have not thoroughly developed, it is as follows :—

You think that many ages before the existence of man, the Almighty created the materials of the world. That they were at first in a fluid or nebular state,* and having a rotatory motion, assumed a spherical form. That the crust of the earth became cool, and crystalized into granite, syenite, porphyry, and other primitive rocks.

After a lapse of time, in consequence of volcanic action, particles of granite, syenite, &c., were thrown into space; and subsiding slowly in water, formed new combinations, under the name of slate and shale, and *limestone* and conglomerate, called transition rocks.

Another long interval of time having passed away, new volcanoes produced new combinations, and the secondary, and afterwards the tertiary, rocks were formed.

Noah's flood occasioned what are called the diluvial deposits; and the recent depositions from rivers, those which are named alluvial.

After which of these convulsions man was formed you do not distinctly say, and I am only led from a few expressions to infer that it was *posterior* to the formation of the tertiary series of rocks.†

* p. 39.

† "We may consider the history of secondary and also of tertiary strata in two points of view—the one respecting their actual state as dry land destined (*that is afterwards*) to be the habitation of man."—Buckland, p. 67.

Again—"It may be stated generally that the greater number of the most populous and civilized assemblages of mankind inhabit those portions of the earth which are composed of secondary and tertiary formations."—p. 68.

Now, Sir, if this be a true statement of your opinion, (and if it be not, I shall gladly hear that I am mistaken,) it appears to me that I can establish the two following propositions.

First, that your theory is incompatible with the facts made known to us by geological discoveries.

And secondly, that these facts are reasonably to be explained by attending minutely to the historical account given by Moses.

As to the first proposition.

You say, (p. 40,) "Assuming that the whole materials of the globe may have once been in a fluid or even a nebular state from the presence of intense heat, the passage of the first consolidated portions of this fluid or nebulous matter to a solid state may have been produced by the radiation of heat from its surface into space; the gradual abstraction of such heat would allow the particles of matter to approximate and crystalize; and the first result of this crystalization might have been the formation of a shell or crust, composed of oxidated metals and metalloids, constituting various rocks of the granite series."

Be it so; the world would then consist of internal fire, surrounded by a crust of solid stone.

You proceed to say, (p. 42,) "The detritus of the first dry lands being drifted into the sea, and there spread out," &c.

But where do you get any dry land or any sea? not certainly from the statement in the above quotation.

The first volcano that occurs, breaks through the crust of the world and throws the fragments of the primitive rocks into the air, whence they fall into the water, (if there was any,) and form, by new combinations, the rocks of the transition series. But in these we find animals imbedded, various kinds of fishes, with shells, trilobites, crinoides, corallines, &c. Where did these come from? All fishes and all living creatures must have food. They all live on vegetable matter. But when there was no earth, and no vegetable matter, how could fishes and trilobites, &c., begin or continue?

Consider now the second great convulsion which led to the formation of secondary rocks. Water was still, according to your system, covering the world of transition rocks; upon which water when the new materials fell, as they gradually subsided, they overwhelmed and preserved the fossil remains of innumerable creatures of vast magnitude—megatherium, dinotherium, mastodon, ichthyosaurus, &c.

You give us yet no account of any means by which food could have been procured for these enormous animals.

You will answer probably to these palpable objections that you meant it to be understood that the first volcanic irruptions threw up vegetable earth, which subsequent irruptions so increased that the land became gradually, by repeated accumulations, at last above the water.

But where do you get the seeds of vegetables? They did not come from the volcano.

- Where do you get the spirit to give life to the fishes, the trilobites, the corallines?

A Deity must be called in to give these things a beginning.

After a lapse of ages, then, in which a world, constructed with so much care, continued solely for the habitation and use of such inferior natures, the more extensive volcano forms the transition rocks, and annihilates nearly all existing life. A new combination of materials, and a new variety of life begin. But how could they have a beginning? You must again have recourse to a Deity, without whom your system cannot proceed, from step to step.

New volcanoes now produce the secondary, and afterwards the tertiary series; former existences are destroyed; and new creatures, by successive interpositions of Divine agency, are formed.

Imbedded in the secondary, we find that important and universal mineral, coal, which must have been deposited therefore immediately after the transition series, formed by the first grand volcano. Coal, therefore, must have been formed in a very early period of the created world. You say, (p. 64,) "It is in this secondary formation chiefly, that the remains of plants of a former world have been preserved and converted into coal, having been transported to the bottom of former seas and

“estuaries or lakes, and buried in beds of sand and mud, which have since been changed into sandstone and shale,” &c. Again you say, (p. 525,) ‘It was not enough that these vegetable remains should have been transported from their ancient forests, and buried at the bottom of ancient lakes,’ &c.

Now, Sir, these deposits of coal pervade almost all the globe, and are in some places 30 feet in thickness. What amazing quantities must there be in all the world! To establish your theory we must suppose in the earliest period of creation, when there was scarcely any animated existence—a vast extensive continent of earth—prodigious forests—all torn up by the roots without any known cause—collected together in large masses—then sunk in the water, in which they do not naturally sink, and all (which is the greatest difficulty) reduced to a semi-fluid state—so that they have assumed a smooth solidity, after having yielded to the impression of the most delicate leaves and flowers. These things are not easily to be credited.

In the tertiary series, which you still assert to have been formed under water, we find the bones of hares, hyænas, wolves, and innumerable land animals—how these bones got to the bottom of the sea you do not explain. These animals probably died on the land, and on the land their dead bodies would lie and be decomposed.

Since, however, we find these bones in the tertiary series, we may without controversy and with

certainly only assert, that before these tertiary rocks were formed, such animals had an existence.

We come at last to the consideration of man's creation. According to your system, he came into a world already, and for ages past, peopled with wolves and tigers, hyænas, crocodiles, elephants, &c., (for the fossil remains of all these are found in the tertiary series.) Is it possible that a naked man and woman could have existed an hour in such a company? They must have been created with swords and spades in their hands, or the constant interference of Deity must have been necessary, to guard and to feed them from day to day.

You tell us, (p. 29,) " That the darkness said to " have existed in the evening of the first day was a " *temporary* darkness, produced by an accumulation " of dense vapour upon the face of the deep; an " incipient dispersion of these vapours may have " *re-admitted* light to the earth upon the first day, " while the sun, the existing cause of light, was still " obscured,"

What was the use or meaning of this temporary darkness? By your account the world had enjoyed the light of the sun for ages.

What necessity was there that a temporary darkness should precede the birth of man alone?

You may say however, perhaps, that the whole previous world was destroyed, and a new creation made contemporary with Adam. Wherefore then all the former and various formations and changes?

wherefore the constant and successive interpositions of Deity?

It is for you, Sir, not for me, to explain these difficulties. Enough has, I humbly think, been said, to convince you that your system, as at present understood by persons of common and humble intellects like mine, does not convey a satisfactory explanation of the phenomena, which geological researches have made known to us.

We come now to consider the second proposition, that every fact made known to us by geologists may fairly be explained by minute attention to the Mosaic history.

We may believe with you, Sir, without departing from that history, that the primitive rocks of all denominations were called into existence by the great Creator “in the beginning”—and that they were covered with water. But we learn also from that history, that * the waters were gathered together in one place, and their bounds were set; that dry land, called earth, immediately appeared; † that it brought forth grass, the herb yielding seed, and the fruit tree yielding fruit, whose seed is in itself upon the earth: ‡ that the waters brought forth abundantly § the moving creature that has life. That the earth brought forth the living creature after his kind, cattle and creeping thing: || and the Lord

* Gen. i. 9.

† v. 10.

‡ v. 11.

§ v. 20.

|| Gen. i. 24.

God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul.*

These things continued, according to the Mosaic history, till the flood; men and animals of every kind multiplying exceedingly, for more than 1600 years.

We read of no convulsions, no storms, no variations.

It then pleased God to destroy many of his creatures; and observe attentively the account given of this miraculous interposition of Omnipotent Power.

God said to Noah, † I will cause it to rain upon the earth forty days and forty nights, and all the substance that I have made I will destroy from off the earth.

Gen. vii. 11.—In the six-hundredth year of Noah's life, in the second month, the seventeenth day of the month, in the same day were *all the fountains of the great deep broken up*, and the windows of heaven were opened.

13 v.—And Noah and his sons went into the ark, &c.

14 v.—They, and every beast after its kind, &c.

15 v.—They went in *unto* Noah into the ark, two by two, &c.

18 v.—And the waters prevailed, and were increased greatly.

* Gen. ii. 24.

† Gen. vii. 4.

19 v.—And all the high hills that were under heaven were covered.

23 v.—And every living substance was destroyed which was upon the face of the earth.

24 v.—And the waters prevailed upon the earth one hundred and fifty days.

Gen. viii. 2.—Then the fountains of the deep and the windows of heaven were stopped.

3 v.—And the waters returned from off the earth, going and returning continually ; and after the end of one hundred and fifty days the waters were abated.

5 v.—And the waters decreased continually until the tenth month ; and on the first day of the month were the tops of the mountains seen.

13 v.—And in the six hundred and first year of Noah, in the first month, the waters were dried up from off the earth.

It appears, then, that the waters were continually and rapidly increasing for forty days ; that the highest mountains were covered ; that the waters remained going and returning, that is, in a certain degree of agitation, for one hundred and ten days more ; that they then began to decrease ; and not till the tenth month, or nearly eight months from the beginning of the flood, were the tops of the mountains seen ; three months after which the waters were dried up.

Now let us consider what would be the probable effect of this tremendous convulsion.

The excess of waters penetrating into the recesses of the rocks might cause the metallic bases to explode and produce volcanoes. But when we read that God himself declared that he would interfere to destroy all the substance that he had made, we need not seek for natural causes for effecting *His* purposes. Moses tells us that the fountains of the great deep were *broken up*—not broken in, but broken up—an expression which evidently indicates marine volcanoes.

Now these volcanoes, bursting with supernatural power from the bottom of the sea, would throw up first the granite, and the syenite, and the porphyry, &c., in small and broken pieces; and these falling into the sea would form new combinations, such as we find in the transition rocks: they would also enclose some marine plants, and such few fishes and such aquatic reptiles as happened to be near and unable to avoid them. The greater number would dash away and escape.

In the mean time, the waters are gradually increasing upon the land.

The active animals flee upwards; they come to Noah, and are taken two by two into the ark. But the heavy inhabitants of the marshy and low ground, the dinotherium, the ichthyosaurus, &c., &c., are unable to get away; they are overwhelmed and drowned, or poisoned by the lime and other materials, which had already fallen into the water.

After some days, new volcanoes, new fountains

of the deep, are broken up; and new combinations of both primitive and transition rocks fall upon the dead animals and fishes, and form the series of secondary rocks in which we find their fossil remains.

But the waters continue day by day to gain upon the land, and all animals, however active and anxious, are in turn overwhelmed and drowned.

We then suppose a third series of volcanic eruptions to ensue, and to carry down and enclose these more active and more properly terrestrial animals, whose skeletons we also find in these very formations.

Conceiving now, what is highly probable, that these repeated heavings of mighty volcanoes had raised great part of that which had been the bottom of the sea above the level of the previous land, and that, therefore, our present hills and nearly all our present land had been for sixteen centuries under the water, every geological phenomenon appears to be of easy explanation.

That those creatures which the Deity intended to extirpate, should perish in the earliest convulsions, while those from which Noah was to choose his companions remained a little longer, excites no surprise. We know not for what reason God should destroy any part of his creation, nor is it for us to know: that he has extirpated some creatures who once existed, seems to be indisputable; but there is no more improbability of his having destroyed them in the time of Noah, than before the days of Adam.

These repeated and long continued volcanoes explain readily the various formations of lime. Suppose that in the beginning lime rocks were among the primitive formations every where; these, ejected by volcanic fire, and heated to a great degree, would fall into the water, and immediately slake, and become a thick and hot liquid, emitting noxious gas, and destroying instantly all the fish which they overwhelmed. But when the water ran off, and the lime was exposed to the air, and to the great incumbent pressure of other deposits, it would assume the appearance of stone again, as we daily see it in common mortar.

When it fell, mixed with the first heavy rocks, it would form the most solid limestone of the transition series;—when mixed with lighter materials, mountain limestone; then lias and oolite; and, lastly, when it fell pure, nothing but chalk. But in all cases where lime predominated, we might expect to find the fossil remains of creatures instantly killed and preserved in a perfect form, though fewest in the chalk; and such are the acknowledged facts.

Your supposition of the limestone being secreted from innumerable præ-Adamite fish, cannot be accepted, because you do not tell us where the fish got the lime which they secreted. All animals which now exist, secrete lime; but then every thing which grows from the earth contains lime. The woman secretes it from her food: the baby se-

cretes it from the milk of the woman, and, mixed with phosphoric acid, derived *perhaps* from the circulation of the blood, (we soon come to conjectures, when we strive to explain the mysterious operations of nature,) the young child is thus supplied with bones ; without the food the bones would never grow. In a world of nothing but granite and water, fish must have existed, if at all, without any shells.

We can get no lime for them or any other animals to secrete, till we admit a Deity to have said :—Let the dry land appear, and let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself upon the earth.

With respect to *coal* :—There is nothing which the pedantry of philosophy has more often insisted on, than the *vegetable* origin of coal. Yet no argument has ever been brought forward in proof of it, that carried conviction to any unprejudiced mind.

What say you, Sir, on the subject ? (p. 464.)

“ Few persons are aware of the nature of the
 “ evidence upon which we have at length arrived
 “ at a certain and satisfactory conclusion, respect-
 “ ing the long disputed question as to the vege-
 “ table origin of coal. It is not unfrequent to find
 “ among the cinders, beneath our grates, traces of
 “ fossil plants, whose cavities having been filled with
 “ silt at the time of their deposition in the

“vegetable mass that gave origin to the coal, have left the impression of their forms upon,”—(upon what?) “the *clay* and *sand* enclosed within them.”

After reading this passage many times, I confess that I can make nothing of it; I do not comprehend the proof which it is supposed to afford.

Might not any plants cause an impression upon a mineral in a state of fusion, as easily as upon a piece of wood?

Mr. Hutton and many others bring forward somewhat similar arguments. They find (as who has not found?) the impression of plants and flowers strongly marked upon the interior of the coal. But it does not therefore follow, that the coal was formed from those plants or flowers, any more than the impression of an ammonite proves that the lias rock was formed *out of* such animals.

It is not more improbable, that at the creation God should make, in the interior of the world, a rock that would burn like coal, than a rock that would not burn like granite.

When the great explosion at the flood took place, the coal would come forth broken and rubbed, by juxtaposition and friction with harder matter, into small particles, or coal dust; these subsiding into liquid would assume a semi-fluid form, closely embracing whatever vegetables they might encounter; and when, by severe pressure, they assumed again a solid shape, and were elevated

above the fluid, they would exhibit the precise appearance which they now present. Strew a path with coal dust, and water it, it becomes black mud, susceptible of any impression; afterwards, when dry, it assumes the solid appearance of coal.

This simple explanation accounts also for the successive layers of coal, and shale, and schistus, which successive eruptions piled one upon another. It accounts also for the immense quantities of that useful mineral, which Providence has bestowed upon us.

Do not say, Sir, that I have ascribed to these volcanoes, more than they can reasonably be supposed to have effected.

Moses tells us, that in the first day when Noah went into the ark (Gen. vii. 11,) the fountains or volcanoes began to act; that the rain continued forty days (vii. 12.); that the waters prevailed one hundred and fifty days, (vii. 24.) He then begins the 8th chapter by saying, "God remembered Noah, and every living thing;" and in the second verse, "The fountains of the deep, and the windows of heaven *were stopped.*" It is fairly to be inferred, then, that till they were stopped, the fountains of the great deep, the tremendous volcanoes, were in constant and quick repeated action for forty days and forty nights.

See what effects a common volcano produced upon the cities of Pompeii and Herculaneum, acting for a short comparative period. What

might be the effect of thousands of such volcanoes incessantly acting through forty successive days ?

If you add to this natural effect the interference of Deity, it becomes absurd, nay, worse than absurd, to limit their power.

When, however, these volcanoes ceased to act, stopped by the voice of Him who had bid them rage, still the waters remained over all for one hundred and ten days afterwards, passing backwards and forwards continually; they would rub off all the lighter soil from the existing earth; they would be charged with particles of every kind of rock; with pulverized coal in vast abundance; with salt, (for the first time perhaps,) become liquid, and destined never more to leave them; with lime hissing, and foaming, and adhering, and combining with every variety of formation.

In the mean time, the bottom of the antient sea being raised up by constant heavings, would be in shape like numerous sugar-loaves joined at their bases; on the inclined sides of which, the first sediments would place themselves in somewhat similar slopes; but as the intervals between the cones were filled up, and as the lower cones became covered, the deposits would approach nearer and nearer to horizontal strata: at last, however, the waters subside, and leave all their deposits on dry land; the lighter portions of their former contents, namely, the chalk, the mould, the decayed vegetable matter, the seeds of plants, the

acorns, and the nuts, &c., at the top ; the granite and the syenite, and the heavier limestone and the other solid formations, at the bottom ; the fish, no longer able to exist in water so poisoned by lime, and salt, and liquid metals, had all perished : but the spawn of some particular kinds would escape, and come again to life, and re-people the new formed seas.

It remains to be explained why the fossil remains of man are so seldom found.

When the bottom of the former sea was elevated above the original land, the waters in subsiding would run down, and cover the latter ; and that which had been earth, or the habitation of man, would be covered by the present sea ; in the deep caverns of which, the fossil remains of antediluvian men may probably be preserved. The only specimen we possess, namely, that in the British Museum, *slightly* corroborates this supposition.

But further ; it may easily be believed, that when the waters were gradually gaining upon the land from hour to hour, human beings, seeing the approaching danger, would exercise their utmost ingenuity to avoid it, and to find means of reaching the highest mountains ; that, in short, they would be the *last* animals destroyed.

But when the mountains were covered, the volcanoes “ were stopped.” There were no more heavy rocks projected on the sea and carrying all things with them to the bottom : the carcasses of

men then would float upon the top of the waters ; or, upon the subsidence of such waters, would be left on the surface of the land. In either case they would speedily be decomposed and fall to dust.

The writer of these pages hopes that he has now established his second proposition, namely, that all the facts made known to us by geological discoveries may be fairly accounted for by a minute attention to the Mosaic history.

He concludes by asking for a notice of his work ; for a correction of the errors into which he may have fallen ; and for a more full and intelligible exposition of Mr. Buckland's theory, from one so capable of giving instruction.

“ Quo cum victus erit, *tecum* certasse feretur.”—*Ovid Met.*

A
VISITATION SERMON,
&c.

